

VII. DISCUSSION

1. By FRED J. MILLER¹

I think I may best start the proceedings this evening by relating something of a strike which took place in one of the large steel works of this country in 1910. It concerns the twelve-hour day and Sunday work, and the incidents connected with it have some lessons that I think we might well consider in connection with the subject to be discussed this evening.

This strike was brought about by the summary discharge of three members of a committee who had been selected by their fellow machinists in the steel works to protest against Sunday work, and to request that it be abolished altogether. This committee had been appointed because the machinists, though they worked normally six days and a total of fifty-four hours and a fraction per week, had been required to work on Sundays until, as workmen always do, they became thoroughly tired of it and wished to avoid it as much as possible. In order to do that one of the men, noting that when they were required to work on Sunday they were notified on the previous Saturday, absented himself from the works on Saturday so that he wouldn't receive the notice to work the next day. Then when he came back to work the next week he told some of his companions what he had done and for what purpose. Upon verifying this the foreman immediately discharged him.

This committee of three men was chosen to protest against the discharge of that man and to ask that Sunday work be discontinued. The committee was thereupon summarily discharged by the management and that brought on the strike.

As the Government was having work done in that establishment at that time—I think armor plate for the Navy—a resolution was introduced in the United States Senate to investigate this strike, something of its causes and the incidents that led to it. The foregoing facts are taken from that report, which further states that at the beginning there were no union men concerned in the strike, although recruiting for the unions went on rapidly after the strike began.

It says that the local police were in sympathy with the men and did not take the proper measures to preserve order in the streets as they should have done. The state police were called. There was rioting and

¹President of the American Society of Mechanical Engineers. Mr. Miller presided at the joint session at which Mr. Drury's paper was presented, and these remarks were the introduction of Mr. Drury and not a discussion which followed the presentation of the paper.

trouble; one man was killed from a shot fired by a state policeman, a number of men were injured and the bitterness engendered by that strike, I have reason to believe, still exists in that institution.

Now, we may perceive that there were several things in connection with that strike that may interest us. To begin with, it shows, as has been shown elsewhere before that strike and since; that serious labor trouble may occur where labor unions take no part in it. In other words, men can be brought together for adverse action and to make war or to follow the methods of war without joining a union. It has happened many times and can happen again.

Another lesson is that where a committee appointed serves voluntarily in the interests of their associates, whether that committee be composed of working men or whether it be composed of business men or lawyers or any kind of men, if that committee acts in the interest of their companions and of their class, then the people on whose behalf they act will not submit to discrimination or injury being done them without a fight. That has always been so and it will be so so long as workmen retain any of the elementary principles of manhood. No group of employers would allow an injury to be done to voluntary representatives of theirs in a negotiation of that sort if they could possibly help it. They always resist it and fight against it for such is the nature of men. It is human nature for a busy executive, harassed for production and so on, to resent the interference of men whom he calls "disturbers" and regards as the cause of all the trouble. He imagines there would be no trouble were it not for these men who have waited upon him to adjust the trouble. He thinks they have stirred up trouble that would otherwise have been non-existent. That is nearly always a mistake

No agitator can get very far unless behind him there is some cause for a grievance or for feeling that things are not right. That cause is not always justified. There may be a misunderstanding or something of that sort. But I think it is safe to say that a considerable proportion of the men at least must always believe, sincerely, that there is some real cause for complaint and grievance; or else your "trouble maker" and your "agitator" can't get very far.

I speak from practical experience and observation on this point. It isn't merely a theory with me, it is the result of much observation and a good deal of practical experience in that line.

Another point is that the public will be probably increasingly interested in industrial disturbances. In

the first place, our industries are now being carried on increasingly by large corporations. Corporations are created and are maintained by the authority of the people. The people may depend upon them for imperative necessities of modern life. The people are responsible for the maintenance of law and order when these outbreaks occur. They must usually contribute to the support of people whose means of subsistence are suspended or destroyed by these upheavals. And they have in most cases maintained, by means of tariffs, prices for the corporation's products, higher than the free working of economic laws would provide. They are for these and other reasons partners in interest to all that a corporation does or does not do that affects the public welfare.

It is, we believe, a proper function of the engineer, standing as he does between the employer or the corporation on one side and the men on the other, to throw all the light possible upon these involved and difficult questions. He occupies a more or less detached position. He is usually an expert and knows the meaning of the things that he is seeing and can understand their bearing upon the question. He is relatively free from prejudice on either side and may be entirely so.

At the recent meeting of engineers at Washington this new function of the engineer was emphasized and brought strongly to the forefront, and it is the object of this meeting to throw additional light upon this matter of the twelve-hour day and of Sunday work, and to discuss it with a view to having it better understood than is generally the case.

To that end I have the pleasure of introducing a gentleman who has been making a study of the three-shifts system in the steel industry, and who will now make his first report to the engineering profession.

2. By ROBERT B. WOLF¹

In talking on the technique of changing from a two-shift to a three-shift day in a continuous process industry, my task is to throw light on the steel problem by presenting accomplished facts in another industry, —the pulp and paper industry. It is assumed you are interested in actual experience and prefer to more or less draw your own conclusions, based upon the facts presented. I will, therefore, start my talk by showing figures and charts in three plants, which I changed

¹Consulting Engineer, New York. Mr. Wolf's discussion is a repetition of an address delivered before the Engineers' Club of Philadelphia (printed in Vol. XXXVII—12, No. 192, of the *Journal* of that Club).

over from a two-shift to a three-shift basis. For obvious reasons I have left off the names of the three companies, but will gladly give information as to the exact place of operations to anyone who cares to go into the matter further.

It has been suggested that I not only give you concrete experiences, but also the conclusions we drew from these experiences. I will, therefore, divide my talk into seven headings, as follows:

1. Actual illustrations of the results obtained in three plants where the change was made.
2. An interpretation of these results.
3. Illustrations of how the shifts were actually rotated.
4. The change in management policy which should accompany the change to three shifts.
5. Proposed further changes being considered in the pulp and paper industry, based upon past experience.

Actual Experience

Under this heading I wish first to submit Chart A, which shows the operation of a sulphite pulp mill from its start in November, 1902, to February, 1906. This chart shows the production in tons per month and also the labor cost per ton, this labor cost including nothing but that labor actually used in the mill itself for converting wood into pulp.

The change from two to three shifts took place some time during the year 1904 and while my own records as to the time of the change are not complete, nor are the records of the company that now owns the mill complete enough to state the exact month, still, as near as I can get at the time of the change, it was during the latter part of the summer of 1904, where the X is shown on the chart. You will note that the labor cost per ton shows practically no increase and as I was superintendent of the mill during this period, I know from actual experience that the increased production shown was because of the better spirit we obtained all through the plant when our men were not being overworked, as was the case with the long eleven and thirteen-hour shifts.

Table I gives the actual increase in the number of men when I changed over another mill from a two to a three-shift basis. This mill was much larger and because it was very complicated and the equipment in poor condition, it was necessary to increase the number of men very materially. You will note the four workers increased from 336 to 455, a total increase of 119 men. The day workers, which numbered 200, were not, of course affected. The actual